<u>Abstract</u>

A hyper encoder module encodes a block of data having a plurality of sub-blocks. Each sub-block includes a plurality of systematic block code codewords. A parity sub-block is added to the block. The parity sub-block is a first sub-block rotated by a predetermined number of bits. Each subsequent sub-block in the n-dimensional block is rotated by an appropriate number of bits and bit-wise XORed. An encoder method and apparatus which includes the hyper encoder module receives the block of data. A row of the block is immediately output and encoded by a first module according to a first encoding scheme. A column is encoded by a second module according to a second encoding scheme. A second set of encoded data is generated, iteratively updated and output by the second module. The hyper encoder module hyper-diagonally encodes the information bits as described above and then output.